

Amendments to the Drawings:

The attached two sheets of drawings include changes to Figures 7 and 13. The first sheet, which includes Figure 7 only, replaces the original sheet. The second sheet, which includes Figures 12 and 13, replaces the original sheet including Figures 12 and 13. In Figure 7, an erroneous use of numeral designator 38 has been correctly replaced with numeral designator 48. In Figure 13, an erroneous use of numeral designators 71 and 73 and their associated leader lines have been deleted.

Attachment: Replacement sheet for Figure 7

Annotated sheet for Figure 7 showing changes in red ink

Replacement sheet for Figures 12 and 13

Annotated sheet for Figures 12 and 13 showing changes in red ink

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as now presently amended, is respectfully requested.

Claims 2-4, 6-8, 10-16, and 18-20 have been canceled. Claims 1, 5, 9, and 17 have been amended. New Claim 21 has been added. Claims 1, 5, 9, 17, and 21 are active in the application.

Applicant notes that the patent application having serial number 10/023,843 has been assigned from Paracer, Inc., to Stratos Lightwave, Inc. Unlike the previous assignee, the current assignee, Stratos Lightwave, Inc., is a non-small entity business concern. Applicant requests the United States Patent and Trademark Office to take notice that the present assignee of the patent application having serial number 10/023,843 is a non-small entity business concern.

Briefly, Applicant's invention is directed to a device for optically connecting at least two optical fibers with at least two photoactive components. Methods and devices are known in the art for optically coupling at least two optical fibers with at least two photoactive devices. However, the known methods and devices are believed to be either relatively large, expensive, and/or fragile.

In order to solve the above-identified problems, Applicants has invented a device which is relatively inexpensive to produce, is relatively small, and is robust.

Claim 1 has been amended so as to generally include the features recited in originally filed Claims 2, 3, and 4. The device as recited in amended Claim 1 is a lens array. The lens array includes a plurality of asymmetric biconvex lenses. Each lens abuts each other lens and as

such the lenses share common boundaries. Furthermore, each lens is truncated in the lateral direction. Such an arrangement of the lenses provides for a compact device. Each lens has a height and a width. The height is approximately 1.5 times the width. Such a geometry allows for improved light gathering characteristics and improved tolerance to mechanical misalignments affecting optical coupling efficiency as compared to smaller symmetrically shaped lenses. Additionally, the lens array includes a common platform which includes alignment pins which mate with alignment holes of an ferrule. The alignment pins are aligned with the plurality of lenses. Finally, the device is made of molded plastic. Therefore, it is believed that the device is both robust and inexpensive to manufacture and to later assemble with other components.

Claim 5 has been amended so as to generally include the features recited in originally filed Claims 6, 7, and 8. The device recited in amended Claim 5 is an assembly for use in optical communications. The assembly includes an optical ferrule, an optical transmitter, and a lens platform. The lens platform includes a set of optical lenses. Each lens of the lens platform has a height and a width. The height is approximately 1.5 times the width. The lens platform also includes a set of alignment pins for mating with the alignment holes of the optical ferrule. The lens platform is made of molded plastic. Therefore, Applicants believe that the assembly as recited in amended Claim is small, robust, and inexpensive.

Claim 9 has been amended so as to generally include the features recited in originally filed Claims 10, 11, and 12. The assembly recited in amended Claim 9 is similar to the assembly recited in amended Claim 5 except that instead of the "optical transmitter" recited in amended Claim 5, amended Claim 9 recites an "optical receiver."

Claim 17 has been amended so as to generally include the features recited in originally filed Claims 18, 19, and 20. The apparatus recited in amended Claim 17 is a lens and alignment frame. The lens and alignment frame includes a planar base from which a tower structure is located. The tower includes a pair of elevated end sections. A set of alignment pins are mounted on the elevated end sections of the tower structure. An array of collinear lenses are part of the lens and alignment frame. Each lens of the array of collinear lenses has a height and a width. The height is approximately 1.5 times the width.

Claims 1, 3-6, 8, 9, and 10-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent Reference 5-88049 (Kobayashi, et al), and further in view of Hashizume.

Claims 2, 7, and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent Reference 5-88049/U.S. Patent No. 6,547,455 (Kobayashi, et al/Hashizume), and further in view of Japanese Patent Reference 9-243867 (Ishida, et al).

Japanese patent reference 5-88049 (Kobayashi, et al.) was cited for disclosing “an optical module comprising a lens array (20) for use in focusing light between a set of photoactive components (81-1) and a set of optical fibers (31) comprising: a plurality of biconvex lenses (25) arrayed on the same glass plate 21.” The examiner notes that “Kobayashi et al fails to teach lenses having greater height than width.” However, Japanese patent reference 5-88049 lacks the claimed features of “collinearly and contiguously positioned” lenses and lenses which are “truncated in said lateral direction so that each lens of the plurality of asymmetric biconvex lenses has an extended boundary between adjacent lenses,” and wherein “the height is approximately 1.5 times the width,” as recited in amended Claim 1. Therefore, Japanese patent

reference 5-88049 is not believed to anticipate or render obvious Applicants' invention as recited in amended Claim 1.

Hashizume was cited for the limited teaching of providing an optical module having a lens structure having a cylindrical shape wherein the height is greater than the width. Hashizume does not disclose a plurality of lenses which are truncated and which have extended boundaries. Thus, Hashizume lacks the claimed features of "collinearly and contiguously positioned" lenses and lenses which are "truncated in said lateral direction so that each lens of the plurality of asymmetric biconvex lenses has an extended boundary between adjacent lenses," and wherein "the height is approximately 1.5 times the width," as recited in amended Claim 1. Therefore, Hashizume is not believed to anticipate or render obvious Applicants' invention as recited in amended Claim 1.

Hashizume was cited in combination with Japanese patent reference 5-88049 for rendering obvious Applicants' claimed invention as recited in amended Claim 1. However, the Hashizume reference does not overcome the shortcomings of Japanese patent reference 5-88049 in regard to amended Claim 1. Therefore, Applicants believe that the proposed combination of references does not anticipate the invention recited in amended Claim 1.

Japanese patent reference 9-243867 (Ishida et al) was cited for the limited teaching of providing guide holes and associated guide pins. However, Japanese patent reference 9-243867 does not disclose a plurality of congruous, truncated lenses which have extended boundaries. Thus, Japanese patent reference 9-243867 lacks the claimed features of "collinearly and contiguously positioned" lenses and lenses which are "truncated in said lateral direction so that each lens of the plurality of asymmetric biconvex lenses has an extended boundary between

adjacent lenses,” and wherein “the height is approximately 1.5 times the width,” as recited in amended Claim 1. Therefore, Japanese patent reference 9-243867 is not believed to anticipate or render obvious Applicants’ invention as recited in amended Claim 1.

Japanese patent reference 9-243867 was cited in combination with Japanese patent reference 5-88049 and Hashizume for rendering obvious Applicants’ claimed invention as recited in amended Claim 1. However, Japanese patent reference 9-243867 does not overcome the shortcomings of Japanese patent reference 5-88049 and Hashizume in regard to amended Claim 1. Therefore, Applicants believe that the proposed combination of references does not anticipate the invention recited in amended Claim 1.

Amended Claims 5, and 9 recite lenses which have a height to width ratio of 1.5:1, and that have extended boundaries. For the reasons stated above, Applicants believe that amended Claims 5, and 9 define over the prior art of record.

Claims 17-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent Reference 9-243867 (Ishida, et al), and further in view of Hashizume.

Japanese patent reference 9-243867, and Hashizume were discussed above.

As discussed above, amended Claim 17 generally includes the subject matter of Claims 18, 19, and 20. Amended Claim 17 recites an array of collinear lenses. Each lens has a height and a width. The height is approximately 1.5 times the width. As such the lenses are able to be placed closer together than symmetric lenses which would have a height to width ratio of 1:1. Thus, Applicants device is compact.

The references of record fail to disclose a device having a height to width ratio of 1.5:1. Therefore, Applicants believe that the references of record do not anticipate or render obvious Applicants' claimed invention as recited in amended Claim 17.

New Claim 21 is directed towards an assembly for use in optical communications. The assembly as recited in new Claim 21 includes an optical ferrule, a plurality of photoactive components, and a lens and alignment frame. The optical ferrule includes twelve optical fibers, and the optical fibers are separated by an interval. The interval is substantially equal to 250 microns. The lens and alignment frame include a plurality of lenses. Each lens has a height and a width. The height is approximately 1.5 times the width. Each lens is truncated and each lens has a contiguous boundary with other lenses. Applicants believe that new Claim 21 defines over the prior art of record.

The attached two sheets of drawings include changes to Figures 7 and 13. The first sheet, which includes Figure 7 only, replaces the original sheet. The second sheet, which includes Figures 12 and 13, replaces the original sheet including Figures 12 and 13. In Figure 7, an erroneous use of numeral designator 38 has been correctly replaced with numeral designator 48. An annotated sheet is attached which shows the changes made to Figure 7 in red ink. In Figure 13, an erroneous use of numeral designators 71 and 73 and their associated leader lines have been deleted. An annotated sheet is attached which shows the changes made to Figure 13 in red ink.

Grammatical and clarify amendments have been made to the specification, and also to the claims.

The above changes to the specification, drawings, and claims are self-evident from the original disclosure; thus, no new matter has been introduced, and no new issues have been raised.

In view of the foregoing comments, it is respectfully submitted that the claims are definite and in condition for allowance. An early and favorable action to that effect is therefore respectfully requested.

Respectfully submitted,

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with the United States Postal Service First-Class mail on this 4th
day of November, 2003, and is addressed to: Mail Stop Non-Fee Amendment
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